

Panhandle Pest Update



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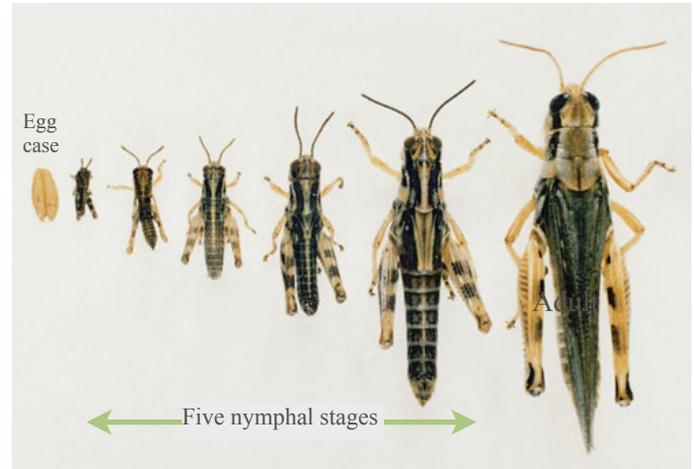


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Grasshoppers

I have received a couple of calls about grasshoppers and what can be used to control them. First, let's look at which grasshoppers we have in the Texas High Plains, about the cause, and biology of the grasshoppers. There are five species in Texas that cause 90% of the damage to crops, rangeland and pastures. These particular grasshoppers belong to the genus *Melanoplus*, which are known as the Spur-Throated Grasshoppers. They can be identified by turning a grasshopper over and looking for a small prosternal spine (spur) between the head and thorax (Figure 1). The species that are the most damaging are the

Differential, Red-legged, Migratory, Two-striped, and Packard grasshoppers (see page two for photos). The main factors affecting the grasshopper populations are climatic conditions such as hot, dry summers and warm autumns over several years. Under these



As adults, these grasshoppers are between 1" to 2" in length. Females weigh approximately 300 mg (~0.0105 oz) and males weigh about 120 mg (~0.004 oz). A hundred female adults will then weigh ~1.05 oz. For such a small animal they eat up to 50% their body weight. Comparing this to a steer which consumes from 1.5% to 2.5% their body weight, an adult female will consume 12 to 20 times as much plant material as a steer. Or, 30 grasshoppers will eat as much as a 600-pound steer (Royer and Mulder "Grasshopper Management in Rangeland, Pastures, and Crops", Oklahoma Cooperative Extension Service EPP-7196). Therefore to determine if grasshopper densities are economically damaging, individuals should survey the population of nymphs and adults using the square-foot method. This requires counting the number of grasshoppers within a square-foot area at 18 different locations spaced 15 to 20 paces apart. The total number of grasshoppers counted from the 18 square-foot areas is then divided by 2 to obtain the number of grasshoppers per square yard. If the grasshoppers are less than 1/2 inch long, divide the total number of grasshoppers sampled by 3 to give the adult equivalent. Any grasshopper longer 1/2 inch should be counted as an adult. The following table can then be used to determine the need for an insecticide application (Patrick and Davis, "Grasshoppers and Their Control", Texas A&M AgriLife Extension E-209).

STERNUM OF THORAX

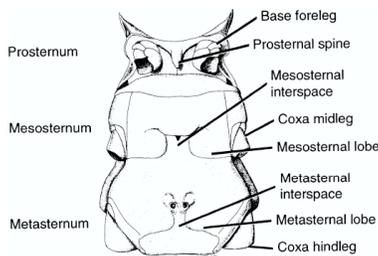


Figure 1. Note the prosternal spine (spur) in this illustration. Pfadt 2002. Field Guide to Common Western Grasshoppers. Wyoming Agricultural Experiment Station Bulletin 912.

favorable conditions a female will lay an average of 200 eggs in a single season in non-crop areas, like ditches, fencerows, and weedy areas. The young grasshoppers (nymphs) hatch in the spring and early summer. They are smaller versions of the adults, but the wings are not developed. The immatures go through five nymphal stages over 40-60 days before becoming an adult. The adults then live up to a month or more flying, eating, and the females laying eggs. Generally, there is one generation produced per year before the cycle begins again.



Table 1. Control thresholds based on numbers of adult grasshoppers per square yard.

Rating	Adults per square yard	
	Margin	Field*
Non-economic	5 to 10	0 to 2
Light	11 to 20	3 to 7
Threatening	21 to 40	8 to 14
Severe	41 to 80	15 to 28
Very severe	80	28+

* Field ratings should be used for both rangelands and croplands.

A list of conventional insecticides labeled as of 2004 for different crops are shown in Table 2 (page 3). These products should provide good control, but grasshoppers may re-infest the treated area once the insecticide activity diminishes or there is new growth. The pyrethroid insecticides will control grasshoppers and may be used (if labeled for the crop) to treated field edges. However, one precaution for use is when the field is infested with spider mites. The pyrethroid insecticide may cause outbreaks of the mite populations. But, they still could be used to treat grasshoppers in the non-crop area next to the crop.

Another insecticide which provides control of grasshopper nymphs (< 1/2 inch long) is Dimilin® 2L, but it is labeled for use on grassland and non-crop areas and can be used on cotton and soybeans. This product is an insect growth regulator, which means it disrupts the molting process and kills nymphs before becoming an adult. Since adults do not molt then Dimilin® will not control adults.

Another newly labeled product that may be mentioned for grasshopper control is Prevathon®. This Du Pont product has a 2(ee) registration for use to control grasshoppers nymphs and suppression of grasshopper adults in grass forage fodder and hay (rangeland & pasture grass) in the state of Texas. The Du Pont representative suggests mixing methylated seed oil (1% v/v) to maximize the chemical activity. Although the product is labeled for use on corn for control of lepidopteran pests, grasshoppers is not on the label for corn.



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Table 2. Conventional insecticides labeled (L) for grasshopper control in field crops.*

Trade names	Alfalfa	Corn ^a	Cotton	Peanuts	Small grains ^b	Sorghum	Soybeans	Sunflowers	Vegetables ^c
Asana XL	L	L	L	L			L	L	L
Baythroid 2	L	L	L			L		L	
Capture 2 EC		L							L
Dimethoate ^d	L	L			L	L	L		L
Di-Syston 15 G					L				L
Furadan 4F	L	L			L			L	
Fury	L	L	L		L	L	L		
Guthion 2 L									L
Guthion Solupak 50 WP									L
Imidan 70 W	L		L						L
Karate (Zeon Tech)				L		L	L		
Leverage 2.7			L						
Lorsban 4E-SG					L				
Lorsban 75 WG	L	L	L			L	L	L	
Lorsban 4 E		L	L		L	L			
Malathion ULV ^e	L	L	L ^f		L	L			
Malthion 8 - EC	L	L ^g			L				
Malathion 57 - EC	L	L ^g			L ^g				
Mustang	L	L	L		L	L	L		
Orthene 75 S and 97			L ^h						L
Orthene 90 S			L ^h						L
Sevin 4F, 80S, 80 WSP and XLR Plus ⁱ	L	L	L	L	L	L	L	L	
Tracer (Naturalyte)					L (suppression only)				L
Warrior (Zeon Tech)	L	L		L	L	L	L	L	

*Follow instructions for application and re-entry restrictions.

^a Corn refers to field, sweet and popcorn. Consult label for different cultivar restrictions.

^b Small grains includes wheat, rye, barley, triticale, etc. Consult label for specific crop.

^c Vegetables includes a wide variety of crops. Consult the label before applying pesticides.

^d There are 16 grasshopper labels for dimethoate from six manufacturers in six differing formulations; dimethoate labels vary considerably.

^e Ultra low volume

^f In cotton, may be used alone as a ULV concentrate spray or diluted in once-refined cottonseed or vegetable oil to make at least 1 quart of finished spray per acre.

^g For small grasshoppers only.

^h Orthene products must be tank-mixed with Lorsban 4E.

ⁱ Labeled for control of specific pests (grasshoppers) or multiple sites. Refer to individual site listings for use limitations and site restrictions.